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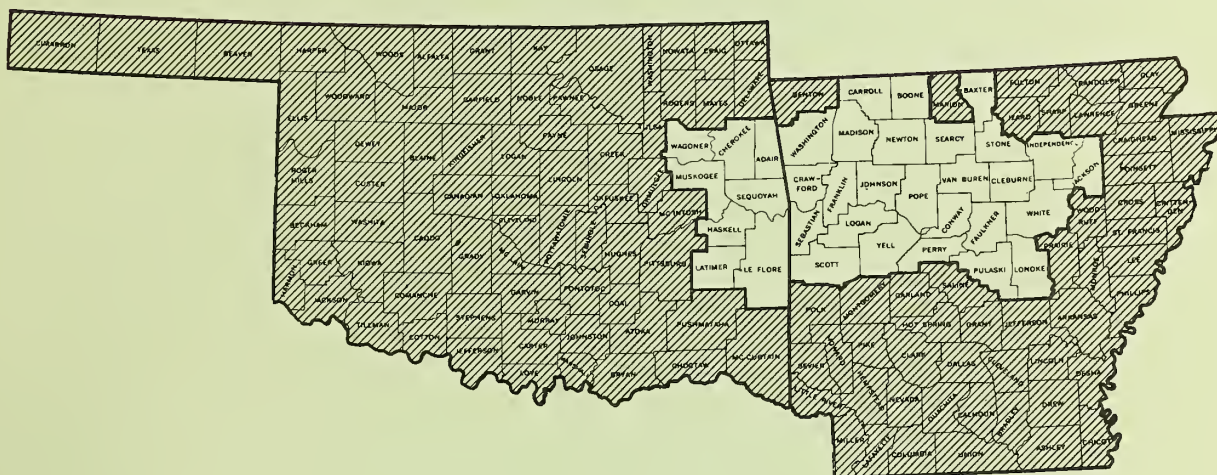
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SOIL SURVEY INTERPRETATIONS FOR WOODLANDS  
IN THE  
BOSTON MOUNTAINS AND ARKANSAS VALLEY AND RIDGES  
OF  
ARKANSAS AND OKLAHOMA



PROGRESS REPORT W-7 -- December 1968

UNITED STATES DEPARTMENT OF AGRICULTURE  
Soil Conservation Service  
Fort Worth, Texas



This report contains interpretations of soil surveys for woodland use and management in the Arkansas Valley - Boston Mountains area of Oklahoma and Arkansas. The purpose is to provide currently available knowledge about soils as they relate to the establishment, growth, management, and harvesting of wood crops for the use of foresters, agricultural workers, woodland owners and woodland managers. The information will be used by the Soil Conservation Service and cooperating agencies in the development of technical guides, soil handbooks and published soil survey reports.

Field information was gathered by teams of foresters and soil scientists. Representatives of Federal and State agencies, the wood-using industry, and others cooperated in gathering field data. Information obtained from soil-woodland studies was recorded by soil taxonomic units. The interpretations presented herein are made for use with soil surveys.

Table 2, SOIL RATINGS FOR WOODLAND USE, includes some evaluations for individual soil units. The soil series listed in column one (1) are defined according to the current soil classification system. Where significant differences in productivity, species suitability, or management problems exist among phases of the same series, these phases are listed and rated separately.

Column two (2) includes a list of some of the commercially important tree species which are adapted to the soil in column one. These are the tree species which woodland managers will generally favor in intermediate or improvement cuttings, after considering the form and vigor of individual trees. Priority between species will be influenced by local marketability and the owners' objectives, as well as the quality of wood products from a given species.

Column three (3) indicates the average site index for the most important species listed in column two. The standard deviation is shown as a plus or minus figure ( $\pm$ ) for each species where five or more plots were taken on the mapping units listed in column one. The site index curves used for each tree species are shown in Table 1, GUIDE FOR WOODLAND SUITABILITY CLASSES. An asterisk (\*) following the site index rating indicates the rating is an estimate based on the same species on a similar soil, or by comparison with another species on the same soil. Site index is the average height of dominant trees at age 30 for cottonwood, age 35 for sycamore, and age 50 for all other species

Column four (4) indicates the range of site index of the most important tree species in column two. The range in site index values is dependent on soil physical conditions, aeration, and nutrient and moisture availability during the growing season.

Column five (5) evaluates the potential erosion hazard of the soil in woodland use following cutting operations, or where the soil is exposed along roads, trails, firebreaks, or log-yarding areas. A rating of slight indicates that problems of erosion control are unimportant. A rating of moderate indicates some attention must be given to prevent unnecessary soil erosion. A rating of severe indicates that intensive treatments, or special equipment and methods of operation should be planned to minimize soil erosion. The potential erosion hazard is based on slope, soil depth, and erodibility, and soil loss tolerance.

Column six (6) includes evaluation of equipment restrictions. Ratings reflect limitations in the use of equipment for managing or harvesting the tree crop. A rating of slight indicates equipment use is seldom limited in kind or time of year. A rating of moderate indicates



a need for modified equipment or seasonal restrictions due to slope, stones, obstructions, soil wetness, flooding, or overflows. A rating of severe indicates the need for specialized equipment due to one or more of the factors listed above.

Column seven (7) indicates the degree of expected seedling mortality during the first two growing seasons after planting or seeding. Normal rainfall, adequate site preparation, good planting stock, proper planting methods, and appropriate protection and cultivation are assumed. A rating of slight indicates that unsatisfactory survival on less than 25 percent of the area is likely. A rating of moderate indicates that unsatisfactory survival is likely on 25 to 50 percent of the area planted. A rating of severe indicates that unsatisfactory survival is likely on more than 50 percent of the area.

It will be noted that aspect on slopes greater than 20 percent are ordinated as being "hot" or "cool" slopes. Hot slopes include those which have south and west aspects; from 135 degrees azimuth (clockwise) to 315 degrees; and cool slopes are those which have north and east aspects, from 315 degrees (clockwise) to 135 degrees. Column seven implies that seedling mortality is greater on hot slopes than on cool slopes.

Column eight (8) lists several suitable tree species for planting on the soil named in column one. The list may include some species which do not normally occur in native stands on the designated soil or in this physiographic area, as well as some of the important species listed in column two.

Column nine (9) shows the ordination of the soils into a woodland suitability group. A woodland suitability group is made up of kinds of soil that are capable of producing similar kinds of wood crops, that need similar management to produce these crops, and that have about the same potential productivity. The ordination system and the suitability group symbols are explained in the following paragraphs.

The first element of the group symbol indicates the woodland suitability class. It expresses site quality by an arabic numeral ranging from 1 to 5, with class 1 the highest in potential productivity, followed by class 2, 3, 4, and 5. It is based on the average site index of one or more indicator forest types or tree species, as shown in Table 1, GUIDE FOR WOODLAND SUITABILITY CLASSES. The indicator species are underscored in column two of Table 2.

The second element in the symbol indicates the suitability subclass. It expresses selected soil properties that cause moderate to severe hazards or limitations in woodland use or management, by one of the following lower case arabic letters:

Subclass x (stoniness or rockiness). Soils having restrictions or limitations for woodland use or management due to stones or rocks.

Subclass w (excessive wetness). Soils in which excessive water, either seasonally or year long, causes significant limitations for woodland use or management. These soils have restricted drainage, high water tables, or overflow hazards which adversely affect either stand development or management.

Subclass d (restricted rooting depth). Soils with restrictions or limitations for woodland use or management due to restricted rooting depths. Soils shallow to hard rock, hardpan, or other



layers in the soil that restrict roots are examples.

Subclass c (clayey soils). Soils having restrictions or limitations for woodland use or management due to the kind or amount of clay in the upper portion of the soil profile.

Subclass s (sandy soils). Sandy soils with little or no textural B horizons and having moderate to severe restrictions or limitations for woodland use or management. These soils impose equipment limitations, have low moisture-holding capacity, and normally are low in available plant nutrients.

Subclass f (fragmental or skeletal soils). Soils with restrictions or limitations for woodland use or management due to large amounts of coarse fragments in the profile over 2 mm and less than 10 inches, but includes flaggy soils.

Subclass r (relief or slope steepness). Soils with restrictions or limitations for woodland use or management due only to steepness of slope.

Subclass o (slight or no limitations). Soils with no significant restrictions or limitations for woodland use or management.

Some kinds of soil may have more than one set of subclass characteristics.

Priority in placing each kind of soil into a subclass is in the order that the subclass characteristics are listed above.

The numeral 1 indicates soils with no to slight management problems, and they are best suited for needleleaf trees.

The numeral 2 indicates soils with one or more moderate management problems, and they are best suited for needleleaf trees.

The numeral 3 indicates soils with one or more severe management problems, and they are best suited for needleleaf trees.

The numeral 4 indicates soils with no to slight management problems, and they are best suited for broadleaf trees.

The numeral 5 indicates soils with one or more moderate management problems, and they are best suited for broadleaf trees.

The numeral 6 indicates soils with one or more severe management problems, and they are best suited for broadleaf trees.

The numeral 7 indicates soils with no to slight management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 8 indicates soils with one or more moderate management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 9 indicates soils with one or more severe management problems, and they are suitable for either needleleaf or broadleaf trees.

The numeral 0 indicates the soils are not suitable for the production of major commercial wood products.

TABLE 1 - GUIDE FOR WOODLAND SUITABILITY CLASSES  
ARKANSAS VALLEY - BOSTON MOUNTAINS

	1	2	3	4	5
Indicator Forest	Very		Moderately		
Type or Species	High	High	High	Moderate	Low
	Site Index				
Cottonwood	(1): 106+	: 96-105	: 86-95	: 76-85	: 75-
Yellow-poplar	(2): 106+	: 96-105	: 86-95	: 76-85	: 75-
Sweetgum	(3): 96+	: 86-95	: 76-85	: 66-75	: 65-
Water oaks	(4): 96+	: 86-95	: 76-85	: 66-75	: 65-
Nuttall oak	(7): 96+	: 86-95	: 76-85	: 66-75	: 65-
Loblolly pine	(5): 96+	: 86-95	: 76-85	: 66-75	: 65-
Slash pine	(6): 96+	: 86-95	: 76-85	: 66-75	: 65-
Shortleaf pine	(5): 86+	: 76-85	: 66-75	: 56-65	: 55-
Longleaf pine	(6): 86+	: 76-85	: 66-75	: 56-65	: 55-
Southern red oak	(8): 86+	: 76-85	: 66-75	: 56-65	: 55-
Water tupelo	(9): 86+	: 76-85	: 66-75	: 56-65	: 55-
Redcedar	(10): 66+	: 56-65	: 46-55	: 36-45	: 35-

- (1) Broadfoot, W. M., 1960, Field Guide for Evaluating Cottonwood Sites, USFS Occ. Paper 178 (Fig. 4).
- (2) Doolittle, W. T., 1957, Site Index Curves for Yellow-poplar-So. Appalachians.
- (3) Broadfoot, W. M., 1959, Guide for Evaluating Sweetgum Sites, USFS Occ. Paper 176 (Fig. 4).
- (4) Broadfoot, W. M., 1963, Guide for Evaluating Water Oak Sites in the Mid-South, USFS Res. Paper SO-1 (Fig. 4).
- (5) Coile, T. S. and F. X. Schumacher, Jour. For. 54:432-435 (Fig. 4,8)
- (6) U. S. Forest Service, 1929, Volume, Yield, and Stand Tables for Second Growth Southern Pines, USDA Misc. Publ. 50 (Fig. 2,3,4).
- (7) Broadfoot, W. M., Unpublished manuscript. Sou. For. Exp. Sta., 1966
- (8) Schnur, L. G., 1937, Yield, Stand and Volume Tables for Even-Aged Upland Oak Forests, USDA Tech. Bull. 560, (Fig. 2).
- (9) Applequist, M. B., 1959, Soil-Site Studies, Sou. Hardwoods (Fig. 7).
- (10) TVA 1948, Site Curves, E. Redcedar, Tennessee Valley.

TABLE 2 . SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species <u>1/</u> <u>2/</u>	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Allen	<u>Shortleaf pine</u>	60+6	54-66	Slight	Slight	Slight	Loblolly pine	4o7
Fine sandy loam,	Red oaks	62+8	54-76				Shortleaf pine	
gravelly fine	White oaks	55+6	49-61				Black walnut 3/	
sandy loam,	Red cedar	40 *	35-45				Black locust 3/	
sandy loam,	Black oak	-					Red oaks 3/	
loamy fine sand	Loblolly pine	-						
0-20% slopes	Black locust	-						
Gravelly fine	Black walnut	-		Moderate	Moderate	Slight-		4x9 --
sandy loam,	Sweetgum	-		to Severe	to Severe	cool Moderate-hot		
loamy fine sand				Slight	Moderate	Slight		4x8 --
20%+ slopes								
stony fine sandy								
loam								
0-20% slopes				Moderate	Moderate	Slight-		
20%+ slopes				to Severe	to Severe	cool Moderate-hot		
Bruno	Sweetgum	80	75-85	Slight	Moderate	Severe	Cottonwood 4/ Sycamore 4/ Loblolly pine	3e9
Loamy sand,	Cottonwood	90	85-95				Shortleaf pine	
loamy sand (local alluvium)	Sycamore	80	75-85				Sweetgum	
0-1% slopes	Loblolly pine	-						
	Shortleaf pine	-						
Cane	<u>Shortleaf pine</u>	57+5	52-62	Slight	Slight	Slight	Loblolly pine	4o7
Fine sandy loam,	Red oaks	67 *	62-72				Shortleaf pine	
gravelly fine	Red cedar	40 *	35-45				Black walnut 3/	
sandy loam	Black walnut	-					Black locust 3/	
0-20% slopes	Black locust	-					Red oaks	
Stony fine sandy	White oak	-			Moderate			4x8 --
loam	Black cherry	-						
0-20% slopes	Loblolly pine	-						
Caspiana	Cottonwood	92	87-97	Slight	Slight	Slight	Sycamore 4/ Cottonwood 4/ Green ash	2o4
Fine sandy loam,	Sycamore	-					Sweetgum	
sandy loam, 0-3%	Sweetgum	-					Red oaks	
slopes	Green ash	-					Water oaks	
	Hackberry	-					Black walnut	
	American elm	-					Black locust	
	Red oaks	-					Shumard oak	
	Black locust	-					Cow oak	
	Shumard oak	-						
	Water oaks	-						
	Black walnut	-						

\* Estimated site index based on a similar soil or another species on the same soil.

- 1/ Red oaks include northern red oak, southern red oak, black oak, and scarlet oak.
- 2/ Underlined species are those selected in determining the site index.
- 3/ Confine to "cool" slopes, coves, benches, and slope bases.
- 4/ Field plantings only; do not interplant or underplant.



TABLE 2. SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Cleora</u> fine sandy loam, fine sandy loam (undulating), gravelly fine sandy loam, gravelly fine sandy loam (undulating), silt loam, silt loam (undulating), sandy loam (undulating), 0-8% slopes	Shortleaf pine Red oaks Sweetgum Cottonwood Sycamore Loblolly pine Green ash Black walnut Water oaks	80 * 80 * 90 * - - - - - -	75-85 75-85 85-95	Slight	Slight	Slight	Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Black walnut Cottonwood 4/ Sycamore 4/ Sweetgum Water oaks	2o7
<u>Crevasse</u> fine sand 0-1% slopes	Cottonwood Sycamore Pecan Silver maple Sugarberry Hackberry	89 * - - - - -	84-95	Slight	Moderate	Severe	Sycamore 4/ Cottonwood 4/ Loblolly pine Shortleaf pine Sweetgum	3s9
<u>Crossville</u> silt loam 0-12% slopes	Shortleaf pine Red cedar Loblolly pine	55 * 35 -	50-60 30-40	Slight	Slight	Slight	Loblolly pine Shortleaf pine Red cedar	4o1
<u>Enders</u> gravelly fine sandy loam, loam, silt loam 0-20% slopes stony fine sandy loam, stony loam 0-20% slopes stony fine sandy loam, stony loam, 20% slopes	Shortleaf pine Red oaks White oak Red cedar Loblolly pine	56+6 56+6 53+7 35 * -	50-62 50-62 46-60 30-40	Slight	Slight  Moderate  Moderate to Severe	Slight  Moderate  Moderate to Severe	Loblolly pine Shortleaf pine Red cedar	4o1  4x2
<u>Elsah</u> soils cobbly and gravelly, stony silt loam, 0-3% slopes	Shortleaf pine Red oaks White oak Red cedar Loblolly pine Black walnut White ash Black cherry Black locust Sweetgum Sycamore Cottonwood Water oaks River birch	70 * 71+2 66 * 50 * - - - - - - - - - -	65-75 66-76 61-71 45-55	Slight	Severe	Severe	Shortleaf pine Loblolly pine Red oaks Black walnut Black locust White ash White oak Sweetgum Cottonwood 4/ Sycamore 4/	3f9
<u>Guthrie</u> fine sandy loam, silt loam 0-3% slopes	Shortleaf pine Water oaks Sweetgum	60 * 73 * 70	55-65 68-78 65-75	Slight	Severe	Moderate to Severe	Loblolly pine Sweetgum Water oak	4w9

TABLE 2 . SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Holston loamy fine sand, fine sandy loam, gravelly fine sandy loam, silt loam, very fine sandy loam 1-20% slopes 20%+ slopes	Shortleaf pine Red oaks White oak Red cedar Loblolly pine Black walnut Black locust Sweetgum	61+7 62+7 57+7 40 * - - - -	54-68 55-69 50-64 35-45 - - - -	Slight       Moderate to Severe	Slight       Moderate to Severe	Slight       Slight- cool Moderate- hot	Loblolly pine Shortleaf pine Black walnut 3/ Black locust 3/ Red oaks 3/ Red cedar	4o7       4r9
stony fine sandy loam, 1-20% slopes 20%+ slopes				Slight	Moderate	Slight		4x8
				Moderate to Severe	Moderate to Severe	Slight- cool Moderate- hot		
Latanier clay 0-3% slopes silty clay loam 0-1% slopes	Water oaks Red oaks Cottonwood Sycamore Green ash Sweetgum Nuttall oak Shumard oak Persimmon Hackberry Pecan Bald cypress Cow oak	94 * - - - - - - - - - - - - -	89-99	Slight	Severe  Moderate	Severe  Moderate	Sweetgum Cottonwood 4/ Sycamore 4/ Nuttall oak Water oak Cow oak Green ash	2w6  2w5
Leadvale silt loam, loam, very fine sandy loam, 0-20% slopes 20%+ slopes	Shortleaf pine Red oaks Red cedar Loblolly pine Black walnut Black locust Sweetgum	64 * 60 45 - - - -	59-69 55-65 40-50 - - - -	Slight      Moderate to Severe	Slight      Moderate to Severe	Slight      Slight- cool Moderate- hot	Black walnut 3/ Loblolly pine Shortleaf pine Red cedar Red oaks 3/ Black locust 3/	4o7     4r9
Lee fine sandy loam 0-3% slopes	Cottonwood Southern red oak Sycamore Sweetgum Shumard oak Cow oak	90 84+3 - - - -	85-95 79-89	Slight	Severe	Severe	Cottonwood 4/ Sycamore 4/ Sweetgum Shumard oak Cow oak	2w6
Lela clay 0-1% slopes	Shumard oak Water oaks Hackberry Green ash	- 88 - -	83-93	Slight	Severe	Severe	Shumard oak Water oak Green ash Osage orange	2c6

TABLE 2. SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Linker gravelly loamy fine sand, loamy fine sand, fine sandy loam, gravelly fine sandy loam, loam, 1-20% slopes 20%+ slopes	Shortleaf pine Red oaks White oak Red cedar Loblolly pine	58+6 52+6 48+5 40 * -	52-64 46-58 43-53 35-45 -	Slight	Slight	Slight	Shortleaf pine Loblolly pine Red cedar	4o1
stony loamy fine sand 1-20% slopes 20%+ slopes				Moderate to Severe	Moderate to Severe	Slight-cool Moderate-hot		4r3
stony loamy fine sand 1-20% slopes 20%+ slopes				Slight	Moderate	Slight		4x2
				Moderate to Severe	Moderate to Severe	Slight-cool Moderate-hot		
Locust Fine sandy loam, gravelly fine sandy loam, gravelly loam, loam, loamy fine sand 0-20% slopes 20%+ slopes	Shortleaf pine Red oaks Red cedar Loblolly pine Black walnut Black locust Sweetgum	64 * 60 45 - - - -	59-69 55-65 40-50 - - - -	Slight	Slight	Slight	Black walnut 3/ Loblolly pine Shortleaf pine Red cedar Red oaks 3/ Black locust 3/	4o7
stony fine sandy loam 1-20% slopes				Moderate to Severe	Moderate to Severe	Slight-cool Moderate-hot		4r9
stony fine sandy loam 1-20% slopes				Slight	Moderate	Slight		4x8
Montevallo Fine sandy loam, gravelly fine sandy loam, 1-20% slopes 20%+ slopes	Shortleaf pine Red cedar Loblolly pine	55 and less 35 and less -	less less -	Slight	Slight	Severe	Shortleaf pine Loblolly pine Red cedar (primarily for erosion control)	5d2
gravelly and stony sandy loam, stony fine sandy loam 1-20% slopes 20%+ slopes				Moderate to Severe	Moderate to Severe			
				Slight	Moderate			
				Moderate to Severe	Moderate to Severe			
Moreland clay 0-3% slopes silty clay loam 0-1% slopes	Water oaks Red oaks Cottonwood Sycamore Green ash Sweetgum Nuttall oak Shumard oak Persimmon Hackberry Pecan Bald cypress Cow oak	94 * - - - - - - - - - - - -	89-99	Slight	Severe	Severe	Sweetgum Cottonwood 4/ Sycamore 4/ Nuttall oak Water oak Cow oak Green ash	2w6 2w5

TABLE 2. SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mountainburg gravelly fine sandy loam, fine sandy loam, sandy loam, gravelly sandy loam, 1-12% slopes 12-20% slopes 20%+ slopes	Shortleaf pine Red cedar Loblolly pine	50+4 30 * -	45-55 25-35	Slight	Slight	Moderate	Shortleaf pine Loblolly pine Red cedar	5d2
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Moderate cool Severe- hot		
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Moderate	Moderate		
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Moderate cool Severe- hot		
gravelly loamy fine sand 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Slight	Severe		
gravelly loamy fine sand 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Severe		
rocky loamy sand 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Moderate			
rocky loamy sand 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe			
Muskingum gravelly fine sandy loam, fine sandy loam, sandy loam, gravelly sandy loam, 1-12% slopes 12-20% slopes 20%+ slopes	Shortleaf pine Red cedar Loblolly pine	50 * 30 *	45-55 25-35	Slight	Slight	Moderate	Shortleaf pine Loblolly pine Red cedar	5d2
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Moderate cool Severe- hot		
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Moderate	Moderate		
stony fine sandy loam 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Moderate cool Severe- hot		
gravelly loamy fine sand 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Slight	Severe		
gravelly loamy fine sand 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe	Severe		
rocky loamy sand 1-12% slopes 12-20% slopes 20%+ slopes				Slight	Moderate			
rocky loamy sand 1-12% slopes 12-20% slopes 20%+ slopes				Moderate Severe	Moderate to Severe			

TABLE 2. SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Norwood silt loam 0-3% slopes	Cottonwood Sycamore Green ash Sweetgum Hackberry American elm Pecan	87 - - 90 - - -	80-90  86-95	Slight	Moderate	Slight	Cottonwood $\frac{4}{4}$ / Sycamore $\frac{4}{4}$ / Sweetgum Green ash	2w5
Philo Fine sandy loam, silt loam, loamy sand, 0-8% slopes	Shortleaf pine Red oaks Sweetgum Shumard oak Cow oak Cottonwood Sycamore Nuttall oak Green ash Loblolly pine Shortleaf pine Tupelo gum	80 * 80 90 - - - - - - - - -	75-85 75-85 85-95	Slight	Moderate	Moderate	Cottonwood $\frac{4}{4}$ / Sycamore $\frac{4}{4}$ / Shumard oak Loblolly pine Sweetgum Cow oak Cherrybark oak Nuttall oak Water oaks Green ash	2w8
Pickwick silt loam 1-8% slopes	Shortleaf pine Loblolly pine Red oaks Red cedar Black walnut Black locust Sweetgum White oak	70 80 70 50 - - - -	65-75 75-85 65-75 45-55	Slight	Slight	Slight	Black walnut $\frac{3}{3}$ / Black locust $\frac{3}{3}$ / Loblolly pine Shortleaf pine Red oaks Red cedar	3o7
Razort Fine sandy loam, gravelly fine sandy loam, gravelly silt loam, silt loam, 0-8% slopes undulating	Shortleaf pine Red oaks Cottonwood Sycamore Sweetgum White oak Loblolly pine Black locust Black walnut Black cherry White ash Water oaks Shumard oak	80 80 * 90 85 80 75 - - - - - - -	75-85 75-85 85-95 80-90 75-85 70-80	Slight	Slight	Slight	Black walnut Black locust Sycamore $\frac{4}{4}$ / Cottonwood $\frac{4}{4}$ / Red oaks Shortleaf pine Loblolly pine Shumard oak White oak Sweetgum White ash	2o7
Robinsonville fine sandy loam, sandy loam, 0-3% slopes	Cottonwood Sycamore Sweetgum Hackberry American elm Red oaks Black locust Shumard oak Water oaks Black walnut Green ash	92 - - - - - - - - - -	87-97	Slight	Slight	Slight	Sycamore $\frac{4}{4}$ / Cottonwood $\frac{4}{4}$ / Green ash Sweetgum Red oaks Water oaks Black walnut Black locust Shumard oak Cow oak	2o4
Rosebloom fine sandy loam, 0-3% slopes	Cottonwood Southern red oak Sycamore Sweetgum Shumard oak Cow oak	90 84+3 - - - -	85-95 79-89	Slight	Severe	Severe	Cottonwood $\frac{4}{4}$ / Sycamore $\frac{4}{4}$ / Sweetgum Shumard oak Cow oak	2w6
Samba silt loam, silt loam(mounded), silty clay, silty clay (mounded), 0-3% slopes	Water oaks Sweetgum Loblolly pine Shortleaf pine	70 70 70 65	65-75 65-75 65-75 60-70	Slight	Moderate	Moderate	Sweetgum Loblolly pine Shortleaf pine	4w8



TABLE 2. SOIL RATINGS FOR WOODLAND USE

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Soils	Potential Productivity			Management Problems			Species Suitability for Planting	Ordination Woodland Suitability Group
	Tree Species	Avg. Site Index & Standard Deviation	Range of Site Index	Erosion Hazard	Equipment Restriction	Seedling Mortality		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Sequatchie</u> fine sandy loam, loam, loamy fine sand, 1-12% slopes	<u>Shortleaf pine</u>	70 *	65-75	Slight	Slight	Slight	Black walnut Loblolly pine Shortleaf pine Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Shumard oak	80	75-85					
	Loblolly pine	-	-					
	Sweetgum	-	-					
	Black walnut	-	-					
	Black locust	-	-					
	Water oaks	-	-					
	Red cedar	50	45-55					
	Black cherry	-	-					
<u>Stendal</u> fine sandy loam, silt loam, 0-1% slopes	<u>Sweetgum</u>	90	85-95	Slight	Severe	Severe	Cottonwood 4/ Sycamore 4/ Shumard oak Loblolly pine Cow oak Sweetgum	2w9
	Water oaks	90	85-95					
	Cottonwood	90	85-95					
	Shumard oak	-	-					
	Loblolly pine	-	-					
	Sycamore	-	-					
	Tupelo gum	-	-					
	Red oaks	-	-					
	Cow oak	-	-					
<u>Taft</u> fine sandy loam, silt loam, very fine sandy loam, 0-8% slopes	<u>Shortleaf pine</u>	60 *	55-65	Slight	Moderate	Slight	Loblolly pine Sweetgum Water oaks	4w8
	Water oaks	65	60-70					
	Sweetgum	65	60-70					
	Loblolly pine	-	-					
	<u>Shortleaf pine</u>	69 *	64-74		Moderate to Severe	Moderate to Severe	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
	Black walnut	-	-					
	Shumard oak	-	-					
	Sweetgum	-	-					
	Cherrybark oak	-	-					
	Black locust	-	-					
<u>Waynesboro</u> fine sandy loam, gravelly fine sandy loam, soils, gravelly, 0-20% slopes 20% slopes stony fine sandy loam, 1-20% slopes	<u>Shortleaf pine</u>	69 *	64-74	Slight	Moderate	Slight	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
	Black walnut	-	-					
	Shumard oak	-	-					
	Sweetgum	-	-					
	Cherrybark oak	-	-					
	Black locust	-	-					
<u>Wellston</u> loam, silt loam, 1-12% slopes	<u>Shortleaf pine</u>	60 *	55-65	Slight	Slight	Slight	Shortleaf pine Loblolly pine Red cedar	4o1
	Red cedar	40	35-45					
	Loblolly pine	-	-					
	<u>Shortleaf pine</u>	60	55-65		Moderate	Slight	Sweetgum Loblolly pine Shortleaf pine	4w8
	Water oaks	65	60-70					
	Sweetgum	65	60-70					
	Loblolly pine	-	-					
	Red cedar	40	35-45					
	<u>Shortleaf pine</u>	60	55-65		Moderate to Severe	Moderate to Severe	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Water oaks	65	60-70					
	Sweetgum	65	60-70					
<u>Whitwell</u> silt loam, 0-3% slopes	<u>Shortleaf pine</u>	60	55-65	Slight	Moderate	Slight	Sweetgum Loblolly pine Shortleaf pine	4w8
	Water oaks	65	60-70					
	Sweetgum	65	60-70					
	Loblolly pine	-	-					
	Red cedar	40	35-45					
	<u>Shortleaf pine</u>	69 *	64-74				Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
<u>Wrightsville</u> silt loam, silty clay loam, 0-2% slopes	<u>Shortleaf pine</u>	69 *	64-74	Slight	Moderate to Severe	Slight	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
	Black walnut	-	-					
	Shumard oak	-	-					
	Sweetgum	-	-					
	Black locust	-	-					
	Red cedar	-	-					
<u>Wrightsville</u> silt loam, silty clay loam, 0-2% slopes	<u>Shortleaf pine</u>	69 *	64-74	Slight	Moderate to Severe	Slight	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
	Black walnut	-	-					
	Shumard oak	-	-					
	Sweetgum	-	-					
	Black locust	-	-					
	Red cedar	-	-					
<u>Wrightsville</u> silt loam, silty clay loam, 0-2% slopes	<u>Shortleaf pine</u>	69 *	64-74	Slight	Moderate to Severe	Slight	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar	3o7
	Red oaks	70	65-75					
	Red cedar	50	45-55					
	Loblolly pine	-	-					
	Black walnut	-	-					
	Shumard oak	-	-					
	Sweetgum	-	-					
	Black locust	-	-					
	Red cedar	-	-					

Table 3, SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY, is a summary of the most important interpretations for a woodland suitability group of soils.

Column one (1) includes the suitability group symbol and a brief description of the group of soils, including their important hazards and limitations for woodland use and management.

Column two (2) is a tabulation of the soil units within each woodland suitability group.

Column three (3) is a list of some commercially-important tree species which occur on the soils in each suitability group.

Column four (4) shows the site class (site index rounded off to the nearest 10-foot interval) for the most important tree species listed in column three.

Column five (5) lists some of the most important tree species which are suitable for planting or direct seeding on the soils in each suitability group.



TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

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Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species 1/	Site Class	
(1)	(2)	(3)	(4)	(5)
<u>2o4</u> Loamy soils with high productivity; no serious management problems; best suited for southern hardwoods.	<u>Caspiana</u> fine sandy loam, sandy loam, 0-3 percent slopes. <u>Robinsonville</u> fine sandy loam, sandy loam, 0-3 percent slopes.	Cottonwood Sycamore Sweetgum Green ash Hackberry American elm Red oaks Black locust Shumard oak Water oaks Black walnut	90 - - - - - - - - - -	Sycamore $\frac{4}{\sqrt{}}$ Cottonwood $\frac{4}{\sqrt{}}$ Green ash Sweetgum Red oaks Water oaks Black walnut Black locust Shumard oak Cow oak
<u>2o7</u> Loamy soils with high potential productivity; no serious management problem; suitable for southern pines or hardwoods.	<u>Cleora</u> fine sandy loam to silt loam (undulating), 0-8 percent slopes. <u>Razort</u> fine sandy loam to silt loam (undulating), 0-8 percent slopes.	Shortleaf pine Red oaks Sweetgum Cottonwood Sycamore Loblolly pine Green ash Black walnut Water oaks	80 80 90 - - - - - -	Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Black walnut Cottonwood $\frac{4}{\sqrt{}}$ Sycamore $\frac{4}{\sqrt{}}$ Sweetgum Water oaks
<u>2w5</u> Seasonally wet loamy and clayey soils with high productivity; moderate equipment limitations and slight to moderate seedling mortality; best suited for southern hardwoods.	<u>Latanier</u> silty clay loam, 0-1 percent slopes. <u>Moreland</u> silty clay loam, 0-2 percent slopes. <u>Norwood</u> silt loam, 0-3 percent slopes.	Cottonwood Sycamore Green ash Sweetgum Hackberry American elm Pecan	90 - - 90 - - -	Cottonwood $\frac{4}{\sqrt{}}$ Sycamore $\frac{4}{\sqrt{}}$ Sweetgum Green ash
<u>2w6</u> Excessively wet loamy and clayey soils with high productivity; severe equipment limitations and seedling mortality; best suited for southern hardwoods.	<u>Latanier</u> clay, 0-3% slopes. <u>Lee</u> fine sandy loam, 0-3 percent slopes. <u>Moreland</u> clay, 0-3 percent slopes. <u>Rosebloom</u> fine sandy loam, 0-3 percent slopes.	Cottonwood Sycamore Sweetgum Red oaks Water oaks White oaks Green ash	90 - - 80 90 - -	Cottonwood $\frac{4}{\sqrt{}}$ Sycamore $\frac{4}{\sqrt{}}$ Sweetgum Red oaks Water oaks White oaks Green ash
<u>2w8</u> Seasonally wet loamy soils with high productivity; moderate equipment limitations and seedling mortality; suitable for southern pines or hardwoods.	<u>Philo</u> silt loam to loamy sand, 0-8 percent slopes.	Shortleaf pine Red oaks Sweetgum Shumard oak Cow oak Cottonwood Sycamore Nuttall oak Green ash Loblolly pine Tupelo gum	80 80 90 - - - - - - - -	Cottonwood $\frac{4}{\sqrt{}}$ Sycamore $\frac{4}{\sqrt{}}$ Shumard oak Loblolly pine Sweetgum Cow oak Cherrybark oak Nuttall oak Water oaks Green ash
<u>2w9</u> Excessively wet loamy soils with high productivity; severe equipment limitations and seedling mortality; suitable for southern pines or hardwoods.	<u>Stendal</u> silt loam to fine sandy loam, 0-1 percent slopes.	Sweetgum Water oaks Cottonwood Shumard oak Loblolly pine Sycamore Tupelo gum Red oaks Cypress	90 90 90 - - - - - -	Cottonwood $\frac{4}{\sqrt{}}$ Sycamore $\frac{4}{\sqrt{}}$ Shumard oak Loblolly pine Cow oak Sweetgum
<u>2c6</u> Excessively wet clayey soils with high potential productivity; severe equipment limitations and seedling mortality; suitable for southern hardwoods.	<u>Lela</u> clay, 0-1 percent slopes.	Shumard oak Water oaks Hackberry Green ash	90 90 - -	Shumard oak Water oaks Green ash Osage orange

TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

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Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species 1/	Site Class	
(1)	(2)	(3)	(4)	(5)
3o7 Loamy upland soils with moderately high potential productivity; no serious management problems; suitable for southern pines or hardwoods.	Sequatchie fine sandy loam to loamy fine sand, 1-12 percent slopes, slightly or moderately eroded. Waynesboro fine sandy loam to gravelly fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Pickwick silt loam, 1-8 percent slopes.	Shortleaf pine Loblolly pine Red oaks Red cedar Black walnut Black locust Sweetgum White oak	70 80 70 50 - - - -	Black walnut Black locust Loblolly pine Shortleaf pine Red oaks Red cedar
3x8 Stony loamy soils with moderately high productivity; moderate equipment limitations; suitable for southern pines or hardwood.	Waynesboro stony fine sandy loam, 1-20 percent slopes, slightly or moderately eroded.	Shortleaf pine Loblolly pine Red oaks Red cedar Black walnut Black locust Sweetgum	70 - 70 50 - - -	Black walnut Black locust Loblolly pine Shortleaf pine Red oaks Red cedar Sweetgum
3s9 Sandy soils with moderately high potential productivity; moderate equipment limitations and severe seedling mortality; suitable for southern pines and hardwood.	Bruno loamy sand, loamy sand (local alluvium), 0-1 percent slopes. Crevasse fine sand, 0-1 percent slopes.	Sweetgum Cottonwood Sycamore Loblolly pine Shortleaf pine	80 90 80 - -	Cottonwood 4/ Sycamore 4/ Loblolly pine Shortleaf pine Sweetgum
3f9 Stony, cobbly and gravelly soils with moderately high potential productivity; severe equipment limitations and seedling mortality; suitable for southern pine and hardwoods.	Elsah soils, cobbly and gravelly to stony silt loam, 0-3 percent slopes.	Shortleaf pine Red oaks White oak Red cedar Loblolly pine Black walnut White ash White ash Black cherry Black locust Sweetgum Sycamore Cottonwood Water oaks River birch	70 70 70 50 - - - - - - - - - - -	Shortleaf pine Loblolly pine Red cedar Black locust Black walnut White ash White oak Sweetgum Cottonwood 4/ Sycamore 4/ Red oaks
3r9 Steep loamy soils with moderately high potential productivity; moderate to severe erosion hazard and equipment limitations; moderate seedling mortality on hot exposures; suitable for southern pine and upland hardwood.	Waynesboro fine sandy loam to gravelly fine sandy loam, above 20 percent slopes; slightly to moderately eroded.	Shortleaf pine Red oaks Red cedar Loblolly pine Black walnut Shumard oak Sweetgum Cherrybark oak Black locust	70 70 50 - - - - - -	Black walnut Loblolly pine Shortleaf pine Cherrybark oak Shumard oak Sweetgum Black locust Red cedar
4o1 Upland soils with moderate potential productivity; no serious management problems; suitable for southern pines and eastern redcedar.	Crossville silt loam, 0-12 percent slopes, slightly or moderately eroded. Enders silt loam to gravelly fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Hartsells loam to gravelly fine sandy loam, 1-20 percent slopes, slightly or moderately eroded. Linker loam to gravelly fine sand, 1-20 percent slopes, slightly or moderately eroded. Wellston silt loam to loam, 1-12 percent slopes, slightly or moderately eroded.	Shortleaf pine Red oaks White oak Red cedar Loblolly pine	60 50 50 40 -	Loblolly pine Red cedar Shortleaf pine

TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

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Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species 1/	Site Class	
(1)	(2)	(3)	(4)	(5)
4o7 Loamy upland soils with moderate potential productivity; no serious management problems; suitable for southern pines and upland hardwoods.	Allen loamy fine sand to gravelly fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Cane fine sandy loam to gravelly fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Holston very fine sandy loam to gravelly fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Leadvale silt loam to very fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Locust fine sandy loam to loamy fine sand, 0-20 percent slopes, slightly or moderately eroded.	Shortleaf pine Red oaks White oaks Red cedar Black oak Loblolly pine Black walnut Black locust Sweetgum	60 60 60 40 - - - - -	Loblolly pine Shortleaf pine Black walnut 3/ Black locust 3/ Red oaks 3/
4x2 Moderately rolling to steep and stony upland soils; with moderate potential productivity; moderate to severe equipment limitations and erosion hazard; moderate seedling mortality on hot exposures; suitable for southern pines and eastern redcedar.	Enders stony fine sandy loam to stony loam, all slopes, slightly or moderately eroded. Hartsells stony fine sandy loam, all slopes, slightly or moderately eroded. Linker stony loamy fine sand, all slopes, slightly or moderately eroded.	Shortleaf pine Red oaks White oak Red cedar Loblolly pine	60 60 50 40 -	Loblolly pine Shortleaf pine Red cedar
4x8 Stony loamy upland soils with moderate potential productivity; moderate to severe erosion hazards and equipment limitations and moderate seedling mortality on hot exposures; suitable for southern pine and upland hardwoods.	Allen stony fine sandy loam, all slopes, slightly or moderately eroded. Cane stony fine sandy loam, 0-20 percent slopes, slightly or moderately eroded. Holston stony fine sandy loam, all slopes, slightly or moderately eroded. Locust stony fine sandy loam, 1-20 percent slopes, slightly or moderately eroded.	Shortleaf pine Red oaks Red cedar Black walnut Black locust Sweetgum White oak Black cherry Loblolly pine	60 60 40 - - - - - -	Loblolly pine Shortleaf pine Black walnut 3/ Black locust 3/ Red oaks 3/
4w8 Seasonally wet soils with moderate potential productivity; moderate equipment limitations and seedling mortality; suitable for southern pines and hardwoods.	Samba silt loam to silty clay (mounded), 0-3 percent slopes. Taft silt loam to loam, 0-8 percent slopes. Whitwell silt loam, 0-3 percent slopes.	Shortleaf pine Water oaks Sweetgum Loblolly pine Red cedar	60 60 70 - 40	Sweetgum Loblolly pine Shortleaf pine
4w9 Excessively wet soils with moderate potential productivity; severe equipment limitations and moderate to severe seedling mortality; suitable for southern pines and hardwoods.	Guthrie fine sandy loam to silt loam, 0-3 percent slopes. Wrightsville silt loam to silty clay loam, 0-2 percent slopes.	Loblolly pine Shortleaf pine Water oaks Sweetgum	60 60 70 70	Loblolly pine Sweetgum Water oaks Shumard oak



TABLE 3. SOIL GROUPINGS ACCORDING TO WOODLAND SUITABILITY

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Woodland Suitability Group (Symbol and Description)	Soils	Productivity		Species Suitability for Planting
		Tree Species 1/	Site Class	
(1)	(2)	(3)	(4)	(5)
4r3 Steep, loamy upland soils with moderate productivity moderate to severe erosion hazards and equipment limitations, and moderate seedling mortality on hot exposures; suitable for southern pine and redcedar.	Hartsells gravelly loamy fine sand, slightly or moderately eroded, over 20 percent slopes. Linker loamy fine sand to gravelly fine sandy loam, slightly or moderately eroded, over 20 percent slopes.	Shortleaf pine Red oaks White oaks Redcedar	60 50 50 40	Loblolly pine Shortleaf pine Redcedar
4r9 Steep, loamy upland soils with moderate potential productivity; moderate to severe erosion hazard and equipment limitations, and moderate seedling mortality on hot exposures, suitable for southern pines and upland hardwoods.	Allen gravelly fine sandy loam to loamy fine sand, over 20 percent slopes, slightly or moderately eroded. Holston loamy fine sand to very fine sandy loam, over 20 percent slopes, slightly or moderately eroded. Leadvale silt loam, loam, very fine sandy loam, over 20 percent slopes. Locust fine sandy loam to gravelly loam, over 20 percent slopes, slightly or moderately eroded.	Shortleaf pine Red oaks White oaks Redcedar Loblolly pine Black locust Black walnut Sweetgum	60 60 50 40 - - - -	Loblolly pine Shortleaf pine Black walnut 3/ Black locust 3/ Red oaks 3/
5d2 Moderately rolling to steep, shallow upland soils with low potential productivity; moderate to severe erosion hazard, equipment limitations and seedling	Hector fine sandy loam to rocky loamy sand, all slopes slightly or moderately eroded. Montevallo fine sandy loam to stony sandy loam, all slopes, slightly or moderately eroded. Mountainburg fine sandy loam to rocky loamy sand, 0 to 20 percent and greater slopes, slightly or moderately eroded. Muskingum fine sandy loam to rocky loamy sand, all slopes slightly or moderately eroded.	Shortleaf pine Redcedar Loblolly pine	50 30 -	Shortleaf pine Loblolly pine Redcedar
1/ Red oaks includes northern red oak, southern red oak, black oak, and scarlet oak.				
3/ Confine to "cool" slopes, coves, benches, and slope bases.				
4/ Field plantings only; do not interplant or underplant.				



